



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,761	10/11/2001	Kenneth C. Caster	IR-2588(ET)CIP2	1165

7590 05/26/2004
Miles B. Dearth
111 Lord Drive
PO Box 8012
Cary, NC 27512-8012

EXAMINER

KNABLE, GEOFFREY L

ART UNIT	PAPER NUMBER
----------	--------------

1733

DATE MAILED: 05/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/975,761

Applicant(s)

CASTER ET AL.

Examiner

Geoffrey L. Knable

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-15, 17, 18 and 20-43 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5, 7-15, 17, 18 and 20-43 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-14-2002.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Art Unit: 1733

1. Applicant's election of Species A1, B1 and C1 in Paper No. 2-4-2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

No claims are now withdrawn as the non-elected claims were canceled.

2. The disclosure is objected to because of the following informalities:

At page 1, line 22, the serial number "09/209,202" is believed to be in error. It apparently should be "09/209,706".

Appropriate correction is required.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 20-22, 41 and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Tokas et al. (US 2002/0053379).

Tokas et al. discloses a process for bonding a metal to an elastomeric substrate where a metathesis catalyst is provided at the metal first substrate surface and a metathesizable material is applied to the elastomeric substrate surface followed by joining to bond - e.g. note claim 20 in the reference. Further, this reference indicates that the metathesizable material can be in the form of mixtures of several monomers -

Art Unit: 1733

note esp. paragraphs [0038] and [0041] as well as claim 34 in the reference. Further, these materials include materials with two or more metathesizable double bonds and therefore this suggestion to use mixtures of these monomers can be characterized as suggesting using mixtures that include cross-linking monomers as required by claim 20. Claim 20 also specifies that the catalyst is applied in solid form - this however is also suggested by Tokas et al. at paragraph [0059]. This reference is therefore considered to anticipate what is required by claim 20. As to claims 21, 22, 41 and 42, note claims 21, 22, 41 and 42 in the reference.

Note: The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

Art Unit: 1733

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5, 7-15, 17, 18 and 20-43 are rejected under 35 U.S.C. 103(a) as being obvious over Tokas et al. (US 2002/0053379) taken in view of Grubbs et al. (US 5,728,785), Suzuki et al. (US 5,137,785) and Mühlebach et al. (US 5,973,085).

Tokas et al. discloses a process for bonding substrates where a metathesis catalyst is provided at a first substrate surface and the metathesizable material is applied to the second substrate surface followed by joining to bond - e.g. note fig. 1. Further, this reference indicates that the metathesizable material can be in the form of mixtures of several monomers - note esp. paragraphs [0038] and [0041] as well as claim 34 in the reference. Further, the disclosed metathesis materials clearly include materials with two or more metathesizable double bonds and therefore this reference is considered to suggest use of monomers that can be characterized as cross-linking monomers as required. Thus, although this reference discloses mixtures including materials that would be crosslinkers, this reference does not explicitly suggest 0.5-20 mol % of a metathesizable crosslinker dissolved in a principal metathesizable material as required by claim 1.

Grubbs et al. provides evidence that those having ordinary skill in this art understand that metathesis polymers having high density cross-linking "are desirable for their improved mechanical strength and low gel swell", these cross-links often being

Art Unit: 1733

achieved using cross-linking agents (col. 3, lines 4-9). Suzuki et al. further evidences that the artisan understands that one suitable and effective manner to form the desired cross-links is to use a cross-linking monomer, i.e. a polycyclic norbornene monomer having at least two reactive double bonds, this being present at least 10% by weight - note col. 3, lines 1-34. Finally, Mühlebach et al. is also directed to forming cross-linked metathesis polymers (including their use as adhesives) and in particular provides further evidence that the artisan appreciates cross-linked metathesis polymers to be desirable (col. 2, lines 21-35) and further that monomers having additional double bonds contribute to the formation of crosslinked polymers (col. 42, lines 60+).

In light of these teachings, it is submitted that the ordinary artisan would have found it obvious to include metathesizable crosslinking monomers in the monomer mixture of Tokas et al. in order to be able to form a polymer with the desirable cross-links. The particular amount used would have been readily and routinely optimized and selected by the artisan to yield desired end product characteristics - note also again that Suzuki indicates that as little as 10% is apparently suitable and effective. The claim 1 process is therefore considered obvious in light of these teachings. As to the dependent claims, all of the dependent claims (except claim 9) have direct analogues in the Tokas et al. reference and therefore are disclosed. As to claim 9, note that materials as required by this claim are disclosed at pages 4-5, it being considered that the artisan would have understood (in light of the secondary references) that the materials with two or more metathesizable double bonds would have been suitable and effective and therefore obvious as cross-linkers. Claims 20-22, 41 and 42, although

Art Unit: 1733

also rejected under 35 USC 102 above (because the Tokas reference alone seems to anticipate use of mixtures including cross-linking monomers as claimed even though there is no explicit description of cross-linking), are also considered to have been obvious in light of the secondary references for the same reasons advanced above - i.e. that it is obvious to include cross-linking materials for the expected advantages that flow from metathesis polymers that are cross-linked as claimed.

Note: The applied reference to Tokas et al. (US 2002/0053379) has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Art Unit: 1733

8. 1-5, 7-16, 17, 18, and 20-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mühlebach et al. (US 5,973,085) taken in view of [Lesser (US 2,978,354), Cole et al. (US 3,485,655) or Krieble (US 2,901,099)] and EP 424,833.

Mühlebach et al. is directed to forming cross-linked metathesis polymers (including their use as adhesives) and in particular discloses combining metathesizable polymers with additional metathesizable polymers that include additional double bonds to contribute to the formation of crosslinked polymers (col. 42, lines 60+), these including amounts at 0.1 to 80% by weight (col. 48, lines 51+). Mühlebach et al. further clearly discloses use of the referenced metathesis polymer systems as adhesives "for joining the most diverse materials", high adhesion to materials these including metals, plastics, etc. being described (esp. cols. 52-53). This reference therefore is considered to suggest a process substantially as claimed except it apparently premixes the catalyst with the monomer(s) rather than preapplying it to one of the substrates.

It is however well known with catalyzed thermosetting resin systems (although metathesis systems are not mentioned in particular) applied on a variety of substrates to provide the catalyst at the substrate surface, rather than mixed with the polymer to be applied, for the advantage of avoiding the shortened pot life of polymer/catalyst mixtures as well as avoiding complicated and costly methods of mixing the catalyst during application - Lesser (note esp. cols. 1-2), Cole et al. (note esp. cols. 1-2) and Krieble (col. 3, lines 19-26) provide evidence in support thereof. Further, EP '833, even though directed to substrates that are intended to contact the monomer in a mold in a RIM

Art Unit: 1733

process, provides evidence that *separate application of a metathesis catalyst to a substrate surface* rather than mixing with the monomer would have been expected to suitably successfully catalyze the desired metathesis reaction.

Taken together, it is submitted that the ordinary artisan would have found it obvious to adhere substrates using a cross-linked metathesis monomer mixture as an adhesive where the catalyst is pre-applied to the substrate surface rather than premixed with the monomer with an expectation of avoiding pot-life and other complicated mixing requirements, EP '833 providing sufficient evidence of a reasonable expectation of being able to successfully catalyze this particular reaction.

The specific metathesizable materials, catalysts and general process conditions of the dependent claims are considered to fall within the well known, typical, conventional and obvious known metathesis reaction materials and conditions, the known broad applicability of such materials rendering it obvious to utilize any of the conventionally utilized materials in this regard absent some conclusive showing of unexpected or unobvious results for any particular materials. Note also that Mühlebach et al. discloses a wide temperature range (e.g. col. 51, lines 22-24) for the reaction as well as a wide range of suitable metathesizable materials.

9. Claims 1-3, 7-15, 17, 18, 23-40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,137,785) taken in view of [Lesser (US 2,978,354), Cole et al. (US 3,485,655) or Krieble (US 2,901,099)] and EP 424,833.

Suzuki discloses a composite including a metathesis polymer catalyzed by any known metathesis catalyst system and that may be located between upper and lower

Art Unit: 1733

substrates (col. 6, lines 21-26), the metathesis polymer is such case forming or functioning as an "adhesive" interposed between and thereby bonding the substrates. Further, the substrates can be thermoplastic elastomer. Note that although it is recognized that the reference did not refer to the metathesis polymerized material as an "adhesive", it is considered to clearly be functioning in this role. Suzuki et al. further explicitly suggests that at least 10% by weight of a cross-linking monomer, i.e. a polycyclic norbornene monomer having at least two reactive double bonds, can be included, - note esp. col. 3, lines 1-34. This reference thus is considered to suggest a process substantially as claimed except that initially providing the catalyst at one of the substrate surfaces is not suggested.

It is however well known when forming catalyzed layers of various thermosetting resin systems (although metathesis systems are not mentioned in particular) on a variety of substrates to provide the catalyst at the substrate surface, rather than mixed with the polymer to be applied, for the advantage of avoiding the shortened pot life of polymer/catalyst mixtures as well as avoiding complicated and costly methods of mixing the catalyst during application - Lesser (note esp. cols. 1-2), Cole et al. (note esp. cols. 1-2) and Krieble (col. 3, lines 19-26) provide evidence in support thereof. Further, EP '833, even though directed to substrates that are intended to contact the monomer in a mold in a RIM process, provides evidence that *separate application of a metathesis catalyst to a substrate surface* rather than mixing with the monomer would have been expected to suitably successfully catalyze the desired metathesis reaction.

Art Unit: 1733


Taken together, it is submitted that the ordinary artisan would have found it obvious to adhere substrates using a metathesis polymerization as taught in the primary reference to Suzuki et al. where the catalyst is pre-applied to the substrate surface rather than premixed with the monomer with an expectation of avoiding pot-life and other complicated mixing requirements, EP '833 providing sufficient evidence of a reasonable expectation of being able to successfully catalyze this particular reaction. The features of the noted dependent claims are considered to have been either explicitly suggested by Suzuki or represent obvious material and process selections consistent with the guidance provided by the reference in terms of material and process condition selections, it additionally being considered that the particularly claimed metathesis monomer/catalyst systems are well known per se in this art - only the expected results would have been achieved.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey L. Knable whose telephone number is 571-272-1220. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1733

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Geoffrey L. Knable
Primary Examiner
Art Unit 1733

G. Knable
May 16, 2004